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A-58762-20/RFT/RMS/RMK

Under the Paperwork Reduction Act of 1995 Substitute for form 1449APTO MADELLES URE Complete if Known Application Number 09/866,067 May 23, 2001 Filing Date Meade et al. EMENT BY APPLICANT First Named Inventor 0 4 2001 Group Art Unit Not Yet Assigned (use as many sheets as necessary) Examiner Name Not Yet Assigned

Attorney Docket Number

			U.S. PATENT DOC		
Examiner Initials*	Cite No.1	U.S. Patent Document	Name of Patentee or Applicant	Date of Publication of Cited Document	Pages, Columns, Line
Initials		Number Kind Code (if known		MM-DD-YYYY	Passages or Relevant Figures Appear
W	1	4,704,193	Bowers et al.	11/1987	
	2	4,707,352	Stavrianopoulos	11/1987	
	3	4,707,440	Stavrianopoulos	11/1987	
	4	4,711,955	Ward et al.	12/1987	
	5	4,755,458	Rabbani et al.	7/1988	
	6	4,787,963	MacConnell	11/1998	
	7	4,840,893 .	Hill et al.	6/1989	
	8	4,849,513	Smith et al.	7/1989	
	9	4,868,103	Stavrianopoulos et al.	9/1989	
	10	4,894,325	Englehardt et al.	1/1990	<u> </u>
	11	4,943,523	Stavrianopoulos	7/1990	
	12	4,945,045	Forrest et al.	07/1990	
	13	4,952,685	Stavrianopoulos	8/1990	
1	14	4,994,373	Stavrianopoulos	2/1991	,
	15	5,002,885	Stavrianopoulos	3/1991	
M	16	5,013,831	Stavrianopoulos	5/1991	
V	17	5,082,830	Brakel et al.	1/1992	
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Examiner Initials*		Foreign Patent Document Kind Code ² Office Number (if known)		Nam	of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	Т	
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	23	CA	2 090 904	A	F. Hot	fman-La Roche	9/1993		士
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Application Number	09/866,067
Filing Date	May 23, 2001
First Named Inventor	Meade et al.
Group Art Unit	Not Yet Assigned
Examiner Name	Not Yet Assigned
Attorney Docket Number	A-58762-20/RFT/RMS/RMK

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w	26	5,089,112		Skotheim et al.	02/1992	Tigates / Apres
	27	5,175,269		Stavrianopoulos	12/1992	
	28	5,180,968	•	Bruckenstein et al.	01/1993	
$\perp \Gamma$	29	5,241,060		Englehardt et al.	8/1993	
	30	5,242,828		bergstrom et al.	09/1993	-
	31	5,278,043		Bannwarth et al.	1/1995	·
	32	5,312,527		Mikkelsen et al.	5/1994	
	33	5,328,824		Ward et al.	7/1994	
	34	5,356,786		Heller et al.	10/1994	
	35	5,391,272		O'Daly et al.	02/1995	
	36	5,403,451		Riviello et al.	4/1995	
	37	5,436,161		Bergstrom et al.	07/1995	
	38	5,443,701		Willner et al.	08/1995	
]	39	5,449,767		Ward et al.	9/1995	
	40	5,472,881		Beebe et al.	12/1995	
	41	5,476,928		Ward et al.	12/1995	
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N	51	5,565,552		Magda et al.	10/1996	
	52	5,571,568		Ribi et al.	11/1996	
	53	5,573,906		Bannwarth et al.	11/1996	
	54	5,591,578		Meade et al.	1/1997	
	55	5,595,908		Fawcett et al.	1/1997	
	56	5,601,982		Sargent et al.	2/1997	
	57	5,620,850		Bamdad et al.	4/1997	
	58	5,632,957		Heller et al.	05/1997	
	59	5,700,667		Marble et al.	12/1997	
	60	5,705,348		Meade et al.	1/1998	
	61	5,741,700		Ershov et al.	4/1998	
	62	5756,050		Ershov et al.	5/1998	
	63	5,770,369		Meade et al.	6/1998	,
	64	5,770,721		Ershov et al.	6/1998	t
T	65	5,776,672		Hashimoto et al.	7/1998	
1.	66	5,780,234		Meade et al.	7/1998	
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	72	wo	97/41425	A1	Univ. of Alberta	11/1997		二
	73	WO	98/20162	A2	Clinical Micro Systems	5/1998		+
	74	WO.	98/27229	A1	Univ. of Chicago	6/1998		_
	75	wo	98/28444	A2	Univ. of Chicago	7/1998		#
	76	WO	98/35232	A2	Univ. of N. Carolina	8/1998		#_
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111	78	5,824,473	Meade et al.	10/1998	<u></u>
	79	5,837,859	Teoule et al.	11/1998	
	80	5,849,486	Heller et al.	12/1998	
	81	5,851,772	Mirzabekov et al.	12/1998	
	82	5,952,172	Meade et al.	9/1999	
	.83	6,060,023	Maracas	05/2000	
	84	6,060,327	Keen	05/2000	
	85	6,071,699	Meade et al.	06/2000	
	86	6,087,100	Meade et al.	07/2000	
	87	6,096,273	Kayyem et al.	08/2000	
	88	6,096,825	Garnier	08/2000	
	89	6,107,080	Lennox et al.	08/2000	
	90	6,177,250	Meade et al.	01/2001	`
	91	6,180,352	Meade et al.	01/2001	
	92	6,200,761	Meade et al.	03/2001	
	93	6,238,870	Meade et al.	05/2001	
V	93a	5,705,346	Okamoto et al.	01/1998	
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u	94	WO	98/57159		A1	Clinical Micro Systems	6/1997		1
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Meade et al.

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First Named Inventor

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w	99	Aizawa et al., "Integrated Molecular Systems for Biosensors," Sensors and Acuators B, B@\$ (Nos 1/3) Part 1:1-5 (March 1995).	-
	100	Albers et al., "Design of Novel Molecular Wires for Realizing Long-Distance Electron Transfer," Biochemistry and Bioenergetics, 42:25-33 (1997).	<u> </u>
	102	Alleman, K.S., et al., "Electrochemical Rectification at a Monolayer-Modified Electrode," J. Phys. Chem., 100:17050-17058 (1996).	-
	103	Arkin et al. "Evidence for Photoelectron Transfer Through DNA Intercalation," J. Inorganic Biochem. Abstracts, 6th International Conference on Bioinorganic Chemistry, 51(1) & (2):526 (1993).	_
	104	Barisci et al., "Conducting Polymer Sensors," TRIP, 4(9):307-311 (1996).	-
	105	Baum, R. M., "Views on Biological, Long-Range Electron Transfer Stir Debate," C&EN, pp 20-23 (1993).	-
	106	Bechtold, R., et al., "Ruthenium-Modified Horse Heart Cytochrome c: Effect of pH and Ligation on the Rate of Intramolecular Electron Transfer between Ruthenium(II) and Heme(III)," J. Phys. Chem., 90(16):3800-3804 (1986).	_
T	107	Bidan, "Electroconducting conjugated polymers: new sensitive matrices to build up chemical or electrochemical sensors. A Review.," Sensors and Actuators, B6:45-56 (1992).	-
	108	Biotechnology and Genetics: Genetic Screening Integrated Circuit," <i>The Economist</i> (February 25-March 3, 1995).	_
	109	Blonder et al., "Three-dimensional Redox-Active layered Composites of Au-Au, Ag-Ag and Au-Ag Colloids," Chem. Commun. 1393-1394 (1998).	٠,-
	110	Boguslavsky, L. et al., "Applications of redox polymers in biosensors," Solid State Ionics, 60:189-197 (1993).	_
	111	Boon et al., "Mutation Detection by Electrocatalysis at DNA- Modified Electrodes," Nature Biotechnology, 18: 1096-1100 (October 2000).	L
	112	Bowler, B. E., et al., "Long-Range Electron Transfer in Donor (Spacer) Acceptor Molecules and Proteins," Progress in Inorganic Chemistry: Bioinorganic Chemistry, 38:259-322 (1990).	-
	113	Brun, A. M., et al., "Photochemistry of Intercalated Quaternary Diazaaromatic Salts," J. Am. Chem. Soc., 113:8153-8159 (1991).	-
	114	Bumm, et al., "Arc Single Molecular Wires Conducting?," Science 271:1705-1707 (1996).	<u>_</u>
	115	Cautor, C.R. et al., "Report on the Sequencing by Hybridization Workshop," Genomics, 13:1378-1383 (1992).	-
	116	Carr et al., "Novel Electrochemical Sensors for Neutral Molecules," Chem. Commun., 1649-1650 (1997).	L
1	117	Carter et al., "Voltammetric Studies of the Interaction of Metal Chelates with DNA. 2. Tris-Chelated Complexes of Cobalt(III) and Iron(II) with 10-Phenanthroline and 2,2'-Bipyridine," J. Am. Chem. Soc., 11:8901-8911 (1989).	Ŀ
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPER 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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Complete if Known Substitute for form 1449B/PTO Application Number 09/866,067 EORMATION DISCLOSURE Filing Date May 23, 2001 TEMENT BY APPLICANT First Named Inventor Meade et al. Group Art Unit Not Yet Assigned 200ke as many sheets as necessary) Examiner Name Not Yet Assigned of Attorney Docket Number A-58762-20/RFT/RMS/RMK OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), published. Examiner Cite Initials* Chang, 1-Jy, et al., "High-Driving-Force Electron Transfer in Metalloproteins: Intramolecular Oxidation of Ferrocytochrome c by Ru(2,2'-bpy)2(im)(His-33)**," J. Am. Chem. Soc., 113:7056-7057 (1991). 119 Chidsey, et al., "Coadsorption of Ferrocene-Terminated and Unsubstituted Alkanethiols on Gold" Electroactive Self-Assembled Monolayers," J. Am. Chem. Soc., 112:4301-4306 (1990). Chidsey, C.E.D., et al., "Free Energy and Temperature Dependence of Electron Transfer at the Metal 120 Electrolyte Interface," Science, 251:919-922 (1991) Chriscy, ct al., "Covalent attachment of synthetic DNA to self-assembled monolayer films," Nucleic 121 Acids Research, 24(15):3031-3039 (1996). Clery, "DNA Goes Electric," Science, 267:1270 (1995).

	 144	Clery, Divi Goes Electric, Edicite, 207:1270 (1770).	-
	123	Commerce Business Daily Issue of September 26, 1996 PSA#1688.	
-	124	Davis, L. M., et al., "Electron Donor Properties of the Antitumour Drug Amsacrine as Studied by Fluorescence Quenching of DNA-Bound	
	125	Davis, L. M., et al., "Elements of bioscnsor construction," Enzyme Microb. Technol. 17:1030-1035 (1995).	
	126	Degani et al., "Direct Electrical Communication between Chemically Modified Enzymes and Metal Electrodes. 2. Methods for Bonding Electron-Transfer Relays to Glucose Oxidase and D-Amino-Acid Oxidase," J. Am. Chem. Soc. 110:2615-2620 (1988).	_
	127	Degani, Y., et al., "Electrical Communication between Redox Conters of Glucose Oxidase and Electrodes via Electrostatically and Covalently Bound Redox Polymers," J. Am. Chem. Soc., 111:2357-2358 (1989).	
	128	Degani, Y., et al., "Direct Electrical Communication between Chemically Modified Enzymes and Metal Electrodes. 1. Electron Transfer from Glucose Oxidase to Metal Electrodes via Electron Relays, Bound Covalentity to the Enzyme," J. Phys. Chem., 91(6):1285-1288 (1987).	_
	129	Deinhammer, R.S., et al., "Electronchemical Oxidation of Amine-containing compounds: A Route to the Surface Modification of glassy carbon electrodes," <i>Langmuir</i> , 10:1306-1313 (1994).	
	130	Dreyer, G. B., et al., "Sequence-specific cleavage of single-stranded DNA: Oligodeoxynucleotide-EDTA·Fe(II)," <i>Proc. Natl. Acad. Sci. USA</i> , 82:968-972 (1985).	
	131	Drobyshev, A. et al., "Sequence Analysis by Hybridization with Oligonucleotide Microchip: Identification of β-thalassemia Mutations," Gene, 188:45-52 (1997).	
	132	Dubiley, S. et al., "Fractionation, phosphorylation and Ligation on Oligonucleotide Microchips to Enhance Sequencing by Hybridization." Nucleic Acids Research, 25(12):2259-2265 (1997).	\vdash

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Durham, B., et al., "Blectron-Transfer Kinetics of Singly Labeled Ruthenium(II) Polypyridine Cytochrome c Derivatives," Advances in Chemistry Series, 226:181-193 (1990)

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w	134	Durham, B., et al., "Photoinduced Electron-Transfer Kinetics of Singly Labeled Ruthenium Bis(bipyridin) Dicarboxybipyridine Cytochrome c Derivatives," Biochemistry, 28:8659-8665 (1989).	-
ĵ.	135	Elghanian et al., "Selective Colorimetric Detection of Polynucleotides Based on the Distance- Dependent Optical Properties of Gold Nanoparticles," Science, 277:1078-1081 (1997).	-
	136	Elias, H., et al., "Electron-Transfer Kinetics of Zn-Substituted Cytochrome c and Its Ru(NH ₃) ₃ (Histidine-33) Derivative," J. Am. Chem. Soc., 110:429-434 (1988),	7
	137	Farver, O., et al., "Long-range intramolecular electron transfer in azurins," Proc. Natl. Acad. Sci. USA, 86:6968-6972 (1989).	,
	138	Fotin, A. et al., "Parallel Thermodynamic Analysis of Duplexes on Oligodeoxyribonucleotide Microchips," Nucleic Acids Research, 216(6):1515-1521 (1998).	-
	139	Fox, M. A., et al., "Light-Harvesting Polymer Systems," C&EN, pages 38-48 (March 15, 1993).	7
	140	Fox, L. S., et al., "Gaussian Free-Energy Dependence of Electron-Transfer Rates in Iridium Complexes," Science, 247:1069-1071 (1990).	ŀ
	141	Francois, J-C., et al., "Periodic Cleavage of Poly(dA) by Oligothymidylates Covalently Linked to the 1,10-Phenanthrolline-Copper Complex," Biochemistry, 27:2272-2276 (1988).	-
	142	Friedman, A. E., et al., "Molecular 'Light Switch' for DNA: Ru(bpy)2(dppz)2"," J. Am. Chem. Soc., 112:4960-4962 (1990).	ŀ
	143	Fromherz, P., et al., "Photoinduced Electron Transfer in DNA Matrix from Intercalated Ethidium to Condensed Methylviologen," J. Am. Chem. Soc., 108:5361-5362 (1986).	ŀ
	144	Gardner, et al., "Application of conducting polymer technology in microsystems," Sensors and Actuators, A51:57-66 (1995).	-
	145	Gregg, B. A., et al., "Redox Polymer Films Containing Enzymes. 1. A Redox-Conducting Epoxy Cement: Synthesis, Characterization, and Electrocatalytic Oxidation of Hydroquinone," J. Phys. Chem., 95:5970-5975 (1991).	
	147	Gregg, B. A., et al., "Cross-linked redox gels containing glucose oxidase for amperometric biosensor applications," Anal. Chem., 62:258-263 (1990).	ŀ
	148	Guschin, D. et al., "Manual Manufacturing of Oligonucleotide, DNA, and Protein Microchips," Analytical Biochemistry, 250:203-211 (1997).	-
	149	Guschin, D. et al., "Oligonucleotide Microchips as Genosensors for Determinative and Environmental Studies in Microbiology," 63(6):2397-2402 (1997).	-
	150	Hashimoto, et al., "Sequence-Specific Gene Detection with a Gold Electrode Modified with DNA Probes and an Electrochemically Active Dye," Anal. Chem. 66:3830-3833 (1994).	-
	151	Hegner, et al., "Immobilizing DNA on gold via thiol modification for atomic force microscopy imaging in buffer solutions," FEBS 336(3):452-456 (1993).	,

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105:35-42 (1979).

266:771-773 (1994)

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Laviron, E., "A.C. Polarography and Faradaic Impedance of Strongly Adsorbed Electoactive Species.

Part III: Theoretical Complex Plane Analysis for a Surface Redox Reaction," J. Electroanal. Chem.,

Lee, et al., "Direct Measurement of the Forces Between Complementary Strands of DNA," Science,

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Ī	First Named Inventor	Meade et al.				
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N	170	Lenhard, J.R., et al., "Part VII Covalent Bonding of a Reversible-Electrode Reactanbt to Pt Electrodes Using an organosilane Reagent" J. Electronal. Chem., 78:195-201 (1977).			
_	171	Lincoln et al., "Shorting Circuiting the Molecular Wire," J. Am. Chem. Soc., 119(6)1454-1455 (1997).	-		
	172	Lipkin "Identifying DNA by the Speed of Electrons," Science News, 147(8):117 (1995).	 -		
	173	Livshits, M. et al., "Theoretical Analysis of the Kinetics of DNA Hybridization with Gel-Immobilized Oligonucleotides," Biophysical Journal, 71:2795-2801 (1996).	-		
	174	Maskos, et al., "Oligonucleotide hybridisations on glass supports: a novel linker for oligonucleotide synthesis and hybridisation properties of oligonucleotides synthesised in situ," Nucleic Acids Research, 20(7):1679-1684 (1992).	_		
	175	McGee, et al., "2'-Amino-2'-deoxyuridine via an Intramolecular Cyclization of a Trichloroacetimidate," J. Org. Chem., 61:781-785 (1996).	-		
	176	Meade, T. J., et al., "Electron Transfer through DNA: Site-Specific Modification of Duplex DNA with Ruthenium Donors and Acceptors," Angew Chem. Int. Ed. Engl., 34:352-354 (1995).	-		
	177	Meade, T. J., "Driving-Force Effects on the Rate of Long-Range Electron Transfer in Ruthenium- Modified Cytochrome c," J. Am. Chem. Soc., 111:4353-4356 (1989).	-		
	178	Mestel, "Electron Highway' Points to Identity of DNA," New Scientist, p. 21 (1995).	1		
	179	Millan, K.M. and Mikkelsen, S.R., "Sequence-Selective Biosensor for DNA Based on Electroactive Hybridization Indicators," Anal. Chem., 65:2317-2323 (1993).	_		
	180	Millau, K.M., et al., "Covalent Immobilization of DNA onto Glassy Carbon Electrodes," Electroanalysis, 4(10):929-932 (1992).	-		
	181	Millan, et al., "Voltammetric DNA Biosensor for Cystic Fibrosis Based on a Modified Carbon Paste Electrode," Anal. Chem., 66:2943-2948 (1994).	-		
	182	Miller, C., "Absorbed ω-Hydroxy Thiol Monolayers on Gold Electrodes: Evidence for Electron Tunneling to Redox Species in Solution," J. Phys. Chem., 95:877-886 (1991).	-		
	183	Mirkin et al., "A DNA-based Method for Ratioally Assembling Nonoparticles into Macroscopic Materials," Nature, 382:607-609 (1996).	F		
	184	Mirzabekov, A. et al., "Dna Sequencing by Hybridization - a Megasequencing Method and a Diagnostic Tool," Tibtech, 12:27-32 (1994).	-		
$\sqrt{}$	185	Mitchell et al., "Programmed Assembly of DNA Functionalized Quantum Dots," J. Am. Chem. Soc., 121:8122-8123 (1999).	_		

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N	186	Mucic et al., "DNA-Directed Synthesis of Binary Nanoparticle Network Materials," J. Am. Chem. Soc., 120:12674-12675 (1998).	_
1	187	Mucic et al., "Synthesis and Characterization of DNA with Ferrocenyl Groups Attached to their 5'-	
		Termini: Electrochemical Characterization of a Redox-Active Nucleotide Monolayer," Chem. Commim., pp. 555-557 (1996).	
	188	Murphy, C. J., et al., "Long-Range Photoinduced Electron Transfer Through a DNA Helix," Science, 262:1025-1029 (1993).	L
	189	Orellana, G., et al., "Photoinduced Electron Transfer Quenching of Excited Ru(II) Polypyridyls Bound to DNA: The Role of the Nucleic Acid Double Helix," <i>Photochemistry and Photobiology</i> , 54(4):499–509 (1991).	
	190	Palecek, "From Polarography of DNA to Microanalysis with Nucleic Acid-Modified Electrodes," Electroanalysis. 8(1):7-14 (1996).	_
	191	Parinov, S., "DNA Sequencing by Hybridization to Microchip octa- and Decanucleotides Extended by Stacked Pentanucleotides," Nucleic Acids Research, 24(15):2998-3004 (1996).	_
	192	Paterson, "Electric Genes: Current Flow in DNA Could Lead to Faster Genetic Testing," Scientific American, 33 (May 1995).	-
	193	Proudnikov, D. "Immobilization of DNA in Polyacrylamide Gel for the manufacture of DNA and DNA-Oligonucleotide Microchips," Analytical Biochemistry, 259:34-41 (1998).	_
	194	Proudnikov, D. et al., "Chemical Methods of DNA and RNA Fluorescent Labeling," Nucleic Acids Research, 24(22):4535-4542 (1996).	_
	195	Purugganan, M. D., et al., "Accelerated Electron Transfer Between Metal Complexes Mediated by DNA, Science, 241:1645-1649 (1988).	_
	196	Reimers et al., "Toward Efficient Molecular Wires and Switches: the Brooker Ions," Biosystems, 35:107-111 (1995).	_
	197	Rhodes, D. And A. Klug, "Helical Periodicity of DNA Determined by Enzyme Digestion," Nature, 286:573-578 (1980).	<u> -</u>
	198	Risser, S. M., et al., "Electron Transfer in DNA: Predictions of Exponential Growth and Decay of Coupling with Donor-Acceptor Distance," J. Am. Chem. Soc., 115(6):2508-2510 (1993).	
-31	199	Sato, Y., et al., "Unidirectional Electron Transfer at Self-Assembled Monolayers of 11-Ferrocenyl-1- undecanethiol on Gold," Bull. Chem. Soc. Jpn., 66(4):1032-1037 (1993).	-
	200	Satyanarayana, S., et al., "Neither Δ- nor Λ-Tris(phenanthroline)ruthenium(II) Binds to DNA by Classical Intercalation," Biochemistry, 31(39):9319-9324 (1992).	<u> </u>
	201	Schreiber, et al., "Bis(purine) Complexes of trans-a,Pt ^{ll} . Preparation and X-ray Structures of Bis(9-methyladenine) and Mixed 9-Methyladenine, 9-Methylguanine Complexes and Chemistry Relevant to Metal-Modified Nucelobase Triples and Quartets," J. Am. Chem. Soc. 118:4124-4132 (1996).	
$oxed{}$	202	Schuhmann, W., et al., "Electron Transfer between Glucose Oxidase and Electrodes via Redox Mediators Bound with Flexible Chains to the Enzyme Surface," J. Am. Chem. Soc., 113:1394-1397 (1991).	_

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n	203	Schumm, et al., "Iterative Divergent/Convergent Approach to Linear Conjugated Oligomers by Successive Doubling of the Molecular Length: A Rapid Route to a 128 Å-Long Potential Molecular Wire," Angew. Chem. Int. Ed. Engl., 33(11):1360-1363 (1994).		
	204	Sigal et al., "A Self-Assembled Monolayer for the Binding and Study of Histidine-Tagged Proteins by Surface Plasmon Resonance," <i>Anal. Chem.</i> , 68(3):490-497 (1996).		
	205	Sloop et al., "Metalloorganic labels for DNA sequencing and mapping," New. J. Chem., 18: 317-326 (1994).		
	206	Southern, et al., "Arrays of complementary oligonucleotides for analysing the hybridisation behaviour of nucleic acids," Nucleic Acids Research, 22(8):1368-1373 (1994).		
	207	Storhoff et al., "One-Pot Colorimetric Differentiation of Polynucleotides with Single Base Imperfections Using Gold Nanoparticles Probes," J. Am. Chem. Soc., 120;1959-1964 (1998).		
	208	Strobel, S. A., et al., "Site-Specific Cleavage of a Yeast Chromosome by Oligonucleotide-Directed Triple-Helix Formation," Science, 249:73-75 (1990).		
	209	Su, et al., "Interlacial Nucleic Acid Hybridization Studied by Random Primer ³² P Labelling and Liquid- Phase Acoustic Network Analysis," <i>Analytical Chemistry</i> , 66(6):769-777 (1994).		
	210	Telser, J., et al., "DNA Oligomers and Duplexes Containing a Covalently Attached Derivative of Tris(2,2'-bipyridine)ruthenium(II): Synthesis and Characterization by Thermodynamic and Optical Spectroscopic Measurements," J. Am. Chem. Soc., 111:7221-7226 (1989).		
	211	Telser, J., et al., "DNA Duplexes Covalently Labeled at Two Sites: Synthesis and Characterization by Steady-State and Time-Resolved Optical Spectroscopies," J. Am. Chem. Soc., 111:7226-7232 (1989).		
	212	Timofeev, E. et al., "Regioselective Immobilization of Short Oligonucleotides to Acrylic Copolymer Gel," Nucleic Acids Research, 24(16): 3142-3148 (1996).		
	213	Timofeev, B. et al., "Methidium Intercalator Inserted into Synthetic Oligonucleotides," Tetrahedron Letters, 37(47):8467-8470 (1996).		
	214	Tour, "Conjugated Macromolecules of Precise Length and Constitution. Organic Synthesis for the Construction of Nanoarchitectures," Chem. Rev., 96:537-553 (1996).		
	215	Tour, et al., "Self-Assembled Monolayers and Multilayors of Conjugated Thiols, a-&-Dithiols, and Thioacetyl-Containing Adsorbates. Understanding Attachments between Potential Molecular Wires and Gold Surfaces," J. Am. Chem. Soc., 117:9529-9534 (1995).		
	216	Tullius, T.D. and B.A. Dombroski, "Iron(II) EDTA Used to Measure the Helical Twist Along Any DNA Molecule," Science, 230:679-681 (1985).		
V	217	Turro, N. J., et al., "Molecular Recognition and Chemistry in Restricted Reaction Spaces. Photophysics and Photoinduced Electron Transfer on the Surfaces of Micelles, Dendrimers, and DNA," Acc. Chem. Res., 24:332-340 (1991).		

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Photochem. Convers. Storage Sol. Energy, Proc. Int. Conf., 8th, pp 121-139 (1990). 219 Uosake, K., et al., "A Self-Assembled Monolayer of Ferrocenylalkane Thiols on Gold as an Electron Mediator for the Reduction of Fe(III)-EDTA in Solution," Electrochemica Acta., 36(11/12):1799-1801 (1991). 220 Van Ness, J., et al., "A Versatile Solid Support System for Oligodeoxynucleotide Probe-Based Hybridization Assays," Nucleic Acids Research, 19(12):3345-3350 (1991). 221 Velev et al., "In Situ Assembly of Colloidal Particles into Miniaturized Biosensors," The ACS Journal of Surfaces and Colloids, Langmuir, 15(11):3693-3698 (1999). 222 Watson et al., "Hybrid Nanoparticles with Block Copolymer Shell Structures," J. Am. Chem. Soc., 121:462-463 (1999). 223 Weber, et al., "Voltammetry of Redox-Active Groups Irreversibly Adsorbed onto Electrodes. Treatment Using the Marcus Relation between Rate and Overpotential," Anal. Chem., 66:3164-3172 (1994). 224 Williams, et al., "Studies of oligonucleotide interactions by hybridisation to arrays: the influence of dangling ends on duplex yield," Nucleic Acids Research, 22(8):1365-1367 (1994). 225 Winkler, J. R., et al., "Electron Transfer in Ruthenium-Modified Proteins," Chem. Rev., 92:369-379 (1992). 226 Xu, et al., "Immobilization and Hybridization of DNA on an Aluminum(III) Alkanebisphosphonate Thin Film with Electrogenerated Chemiluminescent Detection," J. Am. Chem. Soc., 117:2627-2631 (1995). 227 Xu, et al., "Immobilization of DNA on an Aluminum(III) alkaneobisphosphonate Thin Film with Electrogenerated Chemiluminescent Detection," J. Am. Chem. Soc., 116:8386-8387 (1994). 228 Yang, et al., "Growth and Characterization of Metal(III) Alkaneobisphosphonate Multilayer Thin Films on Gold Surfaces," J. Am. Chem. Soc., 115:11855-11862 (1993). 229 Yershov, G. et al., "DNA Analysis and Diagnostics on Oligonucleotide Microchips," Proc. Natl. Acad. Sci. USA, 93:4913-4918 (1996).	Examiner Initials*	Cite No.1		Te
Photochem. Convers. Storage Sol. Energy, Proc. Int. Conf., 8th, pp 121-139 (1990). 219 Uosake, K., et al., "A Self-Assembled Monolayer of Ferrocenylalkane Thiols on Gold as an Electron Mediator for the Reduction of Fe(III)-EDTA in Solution," Electrochemica Acta., 36(11/12):1799-1801 (1991). 220 Van Ness, J., et al., "A Versatile Solid Support System for Oligodeoxynucleotide Probe-Based Hybridization Assays," Nucleic Acids Research, 19(12):3345-3350 (1991). 221 Velev et al., "In Situ Assembly of Colloidal Particles into Miniaturized Biosensors," The ACS Journal of Surfaces and Colloids, Langmuir, 15(11):3693-3698 (1999). 222 Watson et al., "Hybrid Nanoparticles with Block Copolymer Shell Structures," J. Am. Chem. Soc., 121:462-463 (1999). 223 Weber, et al., "Voltammetry of Redox-Active Groups Irreversibly Adsorbed onto Electrodes. Treatment Using the Marcus Relation between Rate and Overpotential," Anal. Chem., 66:3164-3172 (1994). 224 Williams, et al., "Studies of oligonucleotide interactions by hybridisation to arrays: the influence of dangling ends on duplex yield," Nucleic Acids Research, 22(8):1365-1367 (1994). 225 Winkler, J. R., et al., "Electron Transfer in Ruthenium-Modified Proteins," Chem. Rev., 92:369-379 (1992). 226 Xu, et al., "Immobilization and Hybridization of DNA on an Aluminum(III) Alkanebisphosphonate Thin Film with Electrogenerated Chemiluminescent Detection," J. Am. Chem. Soc., 117:2627-2631 (1995). 227 Xu, et al., "Immobilization of DNA on an Aluminum(III) alkaneobisphosphonate Thin Film with Electrogenerated Chemiluminescent Detection," J. Am. Chem. Soc., 116:8386-8387 (1994). 228 Yang, et al., "Growth and Characterization of Metal(III) Alkaneobisphosphonate Multilayer Thin Films on Gold Surfaces," J. Am. Chem. Soc., 115:11855-11862 (1993). 229 Yershov, G. et al., "DNA Analysis and Diagnostics on Oligonucleotide Microchips," Proc. Natl. Acad. Sci. USA, 93:4913-4918 (1996).	1	218	Turro, N., et al. "Photoelectron Transfer Between Molecules Adsorbed in Restricted Spaces,"	\vdash
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of Surfaces and Colloids, Langmuir, 15(11):3693-3698 (1999). 222 Watson et al., "Hybrid Nanoparticles with Block Copolymer Shell Structures," J. Am. Chem. Soc., 121:462-463 (1999). 223 Weber, et al., "Voltammetry of Redox-Active Groups Irreversibly Adsorbed onto Electrodes. Treatment Using the Marcus Relation between Rate and Overpotential," Anal. Chem., 66:3164-3172 (1994). 224 Williams, et al., "Studies of oligonucleotide interactions by hybridisation to arrays: the influence of dangling ends on duplex yield," Nucleic Acids Research, 22(3):1365-1367 (1994). 225 Winkler, J. R., et al., "Electron Transfer in Ruthenium-Modified Proteins," Chem. Rev., 92:369-379 (1992). 226 Xu, et al., "Immobilization and Hybridization of DNA on an Aluminum(III) Alkanebisphosphonate Thin Film with Electrogenerated Chemiluminescent Detection," J. Am. Chem. Soc., 117:2627-2631 (1995). 227 Xu, et al., "Immobilization of DNA on an Aluminum(III) alkaneobisphosphonate Thin Film with Electrogenerated Chemiluminescent Detection," J. Am. Chem. Soc., 116:8386-8387 (1994). 228 Yang, et al., "Growth and Characterization of Metal(II) Alkaneobisphosphonate Multilayer Thin Films on Gold Surfaces," J. Am. Chem. Soc., 115:11855-11862 (1993). 229 Yershov, G. et al., "DNA Analysis and Diagnostics on Oligonucleotide Microchips," Proc. Natl. Acad. Sci. USA, 93:4913-4918 (1996).		220	Van Ness, J., et al., "A Versatile Solid Support System for Oligodeoxynucleotide Probe-Based Hybridization Assays," Nucleic Acids Research, 19(12):3345-3350 (1991).	_
121:462-463 (1999).		221		
Treatment Using the Marcus Relation between Rate and Overpotential," Anal. Chem., 66:3164-3172 (1994). 224 Williams, et al., "Studies of oligonucleotide interactions by hybridisation to arrays: the influence of dangling ends on duplex yield," Nucleic Acids Research, 22(8):1365-1367 (1994). 225 Winkler, J. R., et al., "Electron Transfer in Ruthenium-Modified Proteins," Chem. Rev., 92:369-379 (1992). 226 Xu, et al., "Immobilization and Hybridization of DNA on an Aluminum(II) Alkanebisphosphonate Thin Film with Electrogenerated Chemiluminescent Detection," J. Am. Chem. Soc., 117:2627-2631 (1995). 227 Xu, et al., "Immobilization of DNA on an Aluminum(III) alkanebisphosphonate Thin Film with Electrogenerated Chemiluminescent Detection," J. Am. Chem. Soc., 116:8386-8387 (1994). 228 Yang, et al., "Growth and Characterization of Metal(II) Alkanebisphosphonate Multilayer Thin Films on Gold Surfaces," J. Am. Chem. Soc., 115:11855-11862 (1993). 229 Yershov, G. et al., "DNA Analysis and Diagnostics on Oligonucleotide Microchips," Proc. Natl. Acad. Sci. USA, 93:4913-4918 (1996). 230 Zhou, et al., "Filorescent Chemosensors Based on Energy Migration in Conjugated Polymers: The		222	121:462-463 (1999).	_
dangling ends on duplex yield," Nucleic Acids Research, 22(8):1365-1367 (1994). Winkler, J. R., et al., "Electron Transfer in Ruthenium-Modified Proteins," Chem. Rev., 92:369-379 (1992). Xu, et al., "Immobilization and Hybridization of DNA on an Aluminum(III) Alkanebisphosphonate Thin Film with Electrogenerated Chemiluminescent Detection," J. Am. Chem. Soc., 117:2627-2631 (1995). Zer Xu, et al., "Immobilization of DNA on an Aluminum(III) alkanebisphosphonate Thin Film with Electrogenerated Chemiluminescent Detection," J. Am. Chem. Soc., 116:8386-8387 (1994). Zas Yang, et al., "Growth and Characterization of Metal(II) Alkanebisphosphonate Multilayer Thin Films on Gold Surfaces," J. Am. Chem. Soc., 115:11855-11862 (1993). Zershov, G. et al., "DNA Analysis and Diagnostics on Oligonucleotide Microchips," Proc. Natl. Acad. Sci. USA, 93:4913-4918 (1996). Zhou, et al., "Fluorescent Chemosensors Based on Energy Migration in Conjugated Polymers: The	-	223	Treatment Using the Marcus Relation between Rate and Overpotential," Anal. Chem., 66:3164-3172 (1994).	
(1992). 226 Xu, et al., "Immobilization and Hybridization of DNA on an Aluminum(III) Alkanebisphosphonate Thin Film with Electrogenerated Chemiluminescent Detection," J. Am. Chem. Soc., 117:2627-2631 (1995). 227 Xu, et al., "Immobilization of DNA on an Aluminum(III) alkaneobisphosphonate Thin Film with Electrogenerated Chemiluminescent Detection," J. Am. Chem. Soc., 116:8386-8387 (1994). 228 Yang, et al., "Growth and Characterization of Metal(II) Alkaneobisphosphonate Multilayer Thin Films on Gold Surfaces," J. Am. Chem. Soc., 115:11855-11862 (1993). 229 Yershov, G. et al., "DNA Analysis and Diagnostics on Oligonucleotide Microchips," Proc. Natl. Acad. Sci. USA, 93:4913-4918 (1996). 230 Zhou, et al., "Fluorescent Chemosensors Based on Energy Migration in Conjugated Polymers: The		224	Williams, ct al., "Studies of oligonucleotide interactions by hybridisation to arrays: the influence of dangling ends on duplex yield," <i>Nucleic Acids Research</i> , 22(8):1365-1367 (1994).	F
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Electrogenerated Chemiluminescent Detection," J. Am. Chem. Soc., 116:8386-8387 (1994). 228 Yang, et al., "Growth and Characterization of Metal (II) Alkaneobisphosphonate Multilayer Thin Films on Gold Surfaces," J. Am. Chem. Soc., 115:11855-11862 (1993). 229 Yershov, G. et al., "DNA Analysis and Diagnostics on Oligonucleotide Microchips," Proc. Natl. Acad. Sci. USA, 93:4913-4918 (1996). 230 Zhou, et al., "Fluorescent Chemosensors Based on Energy Migration in Conjugated Polymers: The		226	Thin Film with Electrogenerated Chemiluminescent Detection," J. Am. Chem. Soc., 117:2627-2631	_
228 Yang, et al., "Growth and Characterization of Metal(II) Alkaneobisphosphonate Multilayer Thin Films on Gold Surfaces," J. Am. Chem. Soc., 115:11855-11862 (1993). 229 Yershov, G. et al., "DNA Analysis and Diagnostics on Oligonucleotide Microchips," Proc. Natl. Acad. Sci. USA, 93:4913-4918 (1996). 230 Zhou, et al., "Fluorescent Chemosensors Based on Energy Migration in Conjugated Polymers: The		227	Xu, et al., "Immobilization of DNA on an Aluminum(III) alkaneobisphosphonate Thin Film with Electrogenerated Chemiluminescent Detection," J. Am. Chem. Soc., 116:8386-8387 (1994).	_
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